

| <b>FORM PTO-1449</b><br><br><b>INFORMATION DISCLOSURE CITATION</b> |                            |                   | Attorney Docket:<br>4024-4029US1         |       | Serial No.:<br>TBA 10/607620 |                   |
|--|----------------------------|-------------------|--|-------|------------------------------|-------------------|
|  |                            |                   | Applicant:<br>Keith Kang and Greg Dudoff |       |                              |                   |
|  |                            |                   | Filing Date:<br>June 27, 2003            |       | Group Art Unit: 2839         |                   |
| U.S. PATENT DOCUMENTS  |                            |                   |  |       |                              |                   |
| Examiner Initial   | Patent Number              | Issue Date        | Name                                     | Class | Sub-Class                    | Filing Date       |
| Km   | 3,825,318                  | July 23, 1974     | Croset et al.                            |       |                              | August 10, 1972   |
|  | 4,230,385                  | October 28, 1980  | Ammon et al.                             |       |                              | February 6, 1979  |
|  | 4,966,432                  | October 30, 1990  | Okada et al.                             |       |                              | October 30, 1990  |
|  | 5,175,928                  | January 5, 1993   | Grabbe                                   |       |                              | January 5, 1993   |
|  | 5,214,730                  | May 25, 1993      | Nagasawa et al.                          |       |                              | May 7, 1992       |
|  | 5,259,052                  | November 2, 1993  | Briggs et al.                            |       |                              | February 11, 1991 |
|  | 5,379,361                  | January 3, 1995   | Maekawa et al.                           |       |                              | January 3, 1995   |
|  | 5,400,429                  | March 21, 1995    | Ames et al.                              |       |                              | August 8, 1994    |
|  | 5,473,716                  | December 5, 1995  | Lebby et al.                             |       |                              | December 5, 1995  |
|  | 5,579,426                  | November 26, 1996 | Li et al.                                |       |                              | November 26, 1996 |
|  | 5,613,024                  | March 18, 1997    | Shahid                                   |       |                              | December 21, 1995 |
|  | 5,664,039                  | September 2, 1997 | Grinderslev et al.                       |       |                              | September 2, 1997 |
|  | 5,743,785                  | April 28, 1998    | Lundberg et al.                          |       |                              | April 4, 1996     |
|  | 5,761,350                  | June 2, 1998      | Koh                                      |       |                              | June 2, 1998      |
|  | 6,012,856                  | January 11, 2000  | Kim et al.                               |       |                              | July 30, 1997     |
|  | 6,174,424                  | January 16, 2001  | Wach et al.                              |       |                              | January 16, 2001  |
|  | 6,246,813                  | June 12, 2001     | Zheng                                    |       |                              | March 1, 1999     |
|  | 6,324,316                  | November 27, 2001 | Fouquet et al.                           |       |                              | April 14, 2000    |
|  | 6,328,482                  | December 11, 2001 | Jian                                     |       |                              | December 11, 2001 |
| Km   | Pub. No.<br>US2001/0051026 | December 13, 2001 | Steinberg et al.                         |       |                              | December 13, 2001 |
|  |                            |                   |  |       |                              |                   |
|  |                            |                   |  |       |                              |                   |

|   |                                |
|---|--------------------------------|
| Examiner: <i>H. N. Guy</i>  | Date Considered: <i>2/5/04</i> |
| EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP §609.<br>Draw line through citation if not in conformance and not considered.<br>Include copy of this form with next communication to Applicant. |                                |

|  |   |                                     |
|--|---|-------------------------------------|
| <b>FORM PTO-1449</b><br><br><b>INFORMATION DISCLOSURE CITATION</b> | Attorney Docket:<br><b>4024-4029US1</b>         | Serial No.:<br><b>TBA 10/607620</b> |
|  | Applicant:<br><b>Keith Kang and Greg Dudoff</b> |                                     |
|  | Filing Date:<br><b>June 27, 2003</b>            | Group Art Unit:<br><b>2839</b>      |

| FOREIGN PATENT DOCUMENTS    |               |  |         |       |           |             |
|-----------------------------|---------------|--|---------|-------|-----------|-------------|
| Examiner Initial            | Patent Number | Publication Date   | Country | Class | Sub-Class | Translation |
| OTHER DOCUMENTS (continued) |               |  |         |       |           |             |
| <i>K</i>                    |               | Ayliffe, M.H., "Optomechanical, electrical and thermal packaging of large 2D optoelectronic device arrays for free-space optical interconnects", <i>SPIE</i> , Vol. 3490, pages 502-505.   |         |       |           |             |
|                             |               | Basavanhally, N.R. et al., "Optoelectronic Packaging of Two-Dimensional Surface Active Devices", <i>IEEE Transactions On Components, Packaging, And Manufacturing Technology - Part B</i> , Vol. 19, No. 1, pages 107-114, 1996.       |         |       |           |             |
|                             |               | Boisset, G.C. et al., "On-Die Diffractive Alignment Structures for Packaging of Microlens Arrays with 2-D Optoelectronic Device Arrays", <i>IEEE Photonics Technology Letters</i> , Vol. 8, No. 7, pages 918-920, July 1996.           |         |       |           |             |
|                             |               | Cryan, C.V., "Two-dimensional multimode fibre array for optical interconnects", <i>IEEE Electronic Letters Online No.</i> 19980073, October 23, 1997.  |         |       |           |             |
|                             |               | Giboney, K.S., "Parallel-Optical Interconnect Development at HP Laboratories", <i>SPIE</i> , Vol. 3005, pages 193-201, February 1997.  |         |       |           |             |
|                             |               | Hall, J.P. et al., "Packaging of VCSEL, MC-LED and Detector 2-D Arrays", Electronic Components and Technology Conference, pages 778-782, 1998.   |         |       |           |             |
|                             |               | Hayashi T. and Tsunetsugu H, "Optical Module with MU Connector Interface Using Self-alignment Technique by Solder-bump Chip Bonding", Electronic Components and Technology Conference, page 13-19, 1996.                               |         |       |           |             |
|                             |               | Ishida, H. et al., "Two-dimensionally arranged 24-fiber optical connectors", <i>OFC '97 Technical Digest</i> , pages 189-190, 1997.  |         |       |           |             |
|                             |               | Jöhnck M. et al., "8X* Pof Based Interchip Interconnection with 2.5 Gbit/s Per Channel Data Transmission", ECOC '98, pages 35 and 36, 20-24 September 1998.  |         |       |           |             |
| <i>✓</i>                    |               | Kosaka, M. et al., "Plastic-Based Receptacle-Type VCSEL-Array modules with One and Two Dimensions Fabricated using the self-Alignment Mounting Technique," IEEE Electronic Components and Technology Conference, pp. 382 - 390 (1997). |         |       |           |             |
| <i>K</i>                    |               | Koyabu, K. et al., "Fabrication of Two-Dimensional Fiber Arrays Using Microferrules", <i>IEEE</i> , pages 11-19, 1998.   |         |       |           |             |

|  |                  |                 |               |
|--|------------------|-----------------|---------------|
| Examiner   | <i>K. NGUYEN</i> | Date Considered | <i>2/5/04</i> |
| <b>EXAMINER:</b> Initial if reference considered, whether or not citation is in conformance with MPEP §609.<br>Draw line through citation if not in conformance and not considered.<br>Include copy of this form with next communication to Applicant. |                  |                 |               |

|  |  |                               |
|--|--|-------------------------------|
| FORM PTO-1449<br><br>INFORMATION DISCLOSURE CITATION | Attorney Docket:<br>4024-4029US1         | Serial No.:<br>TBA 10/6076 20 |
|  | Applicant:<br>Keith Kang and Greg Dud ff |                               |
|  | Filing Date:<br>June 27, 2003            | Group Art Unit:<br>2839       |
|  |  |                               |

|    |   |
|----|---|
| km | Lee, S.S., et al. "Self-Aligned Integration of 8 x 1 Micromachined Micro-Fresnel Lens Arrays And 8 x1 Vertical Cavity Surface Emitting Laser Arrays For Free-Space Optical Interconnect", <i>IEEE</i> , pages 31.2.1- 31.2.4, 1994.       |
|    | Liu, Yongsheng et al., "Design, implementation, and characterization of a hybrid optical interconnect for a four-stage free-space optical backplane demonstrator", <i>Applied Optics</i> , Vol. 37, No. 14, pages 2895-2911, 10 May 1998. |
|    | Maj, T. et al., "Interconnection of a two-dimensional array of vertical-cavity surface-emitting lasers to a receiver array by means of a fiber image guide", <i>Applied Optics</i> , Vol. 39, No. 5, pages 683-689, February 10, 2000.    |
|    | McCormick, F.B., "Smart Pixel Optics and Packaging", IEEE/LEOS Summer Topical Meeting: Smart Pickels, pages 45 and 46, August 1996.   |
|    | Ohki, A. et al., "Multi-channel optical coupling between VCSEL arrays and multimode optical fibers for a 40-channel parallel optical interconnection module", <i>IEEE</i> , pages 47 and 48, 1998.  |
|    | G. Proudley, et al., "Fabrication of two dimensional fiber optic arrays for an optical crossbar switch," <i>Optical Engineering</i> , Vol 33, #2, pp. 627-635 , February 1994.  |
|    | Sasian, J. et al., "Fabrication of fiber bundle arrays for free-space photonic switching systems", <i>Optical Engineer</i> , Volume 33, No. 9, pages 2979-2985, September 1994.   |
|    | Söchtig, J. et al., "Replicated Plastic Optical Components for Optical Micro Systems", <i>IEEE</i> , pages 37 and 38, 1998.   |
| km | Tooley, F., "Challenges in Optically Interconnecting Electronics", <i>IEEE Journal Of Selected Topics In Quantum Electronics</i> , Vol. 2, No. 1, pages 3-13, April 1996.   |
|    |   |
|    |   |
|    |   |
|    |   |
|    |   |
|    |   |
|    |   |
|    |   |
|    |   |
|    |   |

|   |                           |
|---|---------------------------|
| Examiner<br>K. NGUYEN   | Date Considered<br>2/5/04 |
| EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP §609.<br>Draw line through citation if not in conformance and not considered.<br>Include copy of this form with next communication to Applicant. |                           |

| <b>FORM PTO-1449</b><br><br><b>INFORMATION DISCLOSURE CITATION</b>  |   |                    | Attorney Docket:<br>4024-4029US1           |       | Serial No. <u>10/607620</u><br>TBA |                    |
|---|---|--------------------|--|-------|------------------------------------|--------------------|
|   |   |                    | Applicant(s)<br>Keith Kang and Greg Dudoff |       |                                    |                    |
|   |   |                    | Filing Date:<br>June 27, 2003              |       | Group Art Unit:<br><u>2839</u>     |                    |
| U.S. PATENT DOCUMENTS   |   |                    |  |       |                                    |                    |
| Examiner Initial  | Patent Number                             | Issue Date         | Name                                       | Class | Sub-Class                          | Filing Date        |
| <u>kn</u>   | 5,241,612                                 | August 31, 1993    | Iwama                                      |       |                                    | September 15, 1992 |
|   | 5,446,815                                 | August 29, 1995    | Ota et al.                                 |       |                                    | March 10, 1994     |
|   | 5,548,675                                 | August 20, 1996    | Shigematsu et al.                          |       |                                    | March 31, 1994     |
|   | 5,550,942                                 | August 27, 1996    | Sheem                                      |       |                                    | March 3, 1995      |
|   | 5,815,621                                 | September 29, 1998 | Sakai et al.                               |       |                                    | February 18, 1997  |
|   | 6,238,100                                 | May 29, 2001       | Sasaki et al.                              |       |                                    | October 20, 1999   |
|   | Published Appln. No.<br>US2002/0131752 A1 | September 19, 2002 | Boudreau et al.                            |       |                                    | August 14, 2001    |
| <u>✓</u>  | 6,496,624                                 | December 17, 2002  | Hikita et al.                              |       |                                    | April 13, 1999     |
| <u>kn</u>   | Published Appln. No.<br>US2002/0197047 A1 | December 26, 2002  | Basavanhally et al.                        |       |                                    | June 21, 2001      |
| FOREIGN PATENT DOCUMENTS  |   |                    |  |       |                                    |                    |
| Examiner Initial  | Patent Number                             | Publication Date   | Country                                    | Class | Sub-Class                          | Translation        |
|   |   |                    |  |       |                                    |                    |
|   |   |                    |  |       |                                    |                    |
| OTHER DOCUMENTS (continued)   |   |                    |  |       |                                    |                    |
|   |   |                    |  |       |                                    |                    |
|   |   |                    |  |       |                                    |                    |
|   |   |                    |  |       |                                    |                    |
| Examiner <u>R. NGUYEN</u>   |   |                    | Date Considered <u>2/5/04</u>              |       |                                    |                    |
| EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP §609.<br>Draw line through citation if not in conformance and not considered.<br>Include copy of this form with next communication to Applicant. |   |                    |  |       |                                    |                    |

|  |   |                              |
|--|---|------------------------------|
| <b>FORM PTO-1449</b><br><br><b>INFORMATION DISCLOSURE CITATION</b> | <b>Attorney Docket:</b><br>4024-4029US1         | <b>Serial No.:</b> 10/607620 |
|  | <b>Applicant:</b><br>Keith Kang and Greg Dudoff |                              |
|  | <b>Filing Date:</b><br>June 27, 2003            | <b>Group Art Unit:</b> 2839  |

### U.S. PATENT DOCUMENTS

| Examiner Initial | Patent Number | Issue Date         | Name             | Class | Sub-Class | Filing Date       |
|------------------|---------------|--------------------|------------------|-------|-----------|-------------------|
| Kn               | 4,744,627     | May 17, 1988       | Chande et al.    |       |           | November 3, 1986  |
|                  | 5,853,626     | December 29, 1998  | Kato             |       |           | October 15, 1997  |
|                  | 5,400,429     | March 21, 1995     | Ames et al.      |       |           | August 8, 1994    |
|                  | 5,671,311     | September 23, 1997 | Stillie et al.   |       |           | October 9, 1996   |
|                  | 6,246,813     | June 12, 2001      | Zheng            |       |           | March 1, 1999     |
|                  | 6,292,529     | September 18, 2001 | Marcovici et al. |       |           | December 15, 1999 |
| ✓                | 6,379,053     | April 30, 2002     | van Doorn        |       |           | May 30, 2000      |
| Kn               | 6,442,306     | August 27, 2002    | Dautartas et al. |       |           | December 21, 1999 |

### FOREIGN PATENT DOCUMENTS

| Examiner Initial | Patent Number | Publication Date | Country | Class | Sub-Class | Translation  |
|------------------|---------------|------------------|---------|-------|-----------|--|
|                  |               |                  |         |       |           | <input type="checkbox"/> Yes <input type="checkbox"/> No |

### OTHER DOCUMENTS (continued)

|    |   |
|----|---|
| Kn | International Search Report dated December 13, 2002 |
| Kn | International Search Report dated December 17, 2002 |
| Kn | International Search Report dated December 20, 2002 |
| Kn | International Search Report dated January 2, 2003   |
| Kn | International Search Report dated January 3, 2003   |

|  |                               |
|--|-------------------------------|
| <b>Examiner</b> K. NGUYEN  | <b>Date Considered</b> 2/5/04 |
| <b>EXAMINER:</b> Initial if reference considered, whether or not citation is in conformance with MPEP §609.<br>Draw line through citation if not in conformance and not considered.<br>Include copy of this form with next communication to Applicant. |                               |